

Claims

1. A method for reducing or preventing apoptosis of cardiomyocytes, said method comprising administering to said cardiomyocytes an effective amount of an anti-apoptotic FADD inhibitor.
2. The method of claim 1, wherein said cardiomyocytes are adult cardiomyocytes.
3. A method for treating, reducing, or preventing cardiac inflammation in a mammal, said method comprising administering to said mammal an effective amount of FADD or an anti-inflammatory FADD inhibitor.
4. A method for treating, reducing, or preventing ischemic reperfusion injury to a heart in a mammal, said method comprising administering to said mammal an effective amount of an anti-apoptotic FADD inhibitor.
5. A method for treating, reducing, or preventing ischemic reperfusion injury to a heart in a mammal, said method comprising administering to said mammal an effective amount of FADD or an anti-inflammatory FADD inhibitor.
6. The method of claim 4 or 5, wherein said ischemic reperfusion injury is acute.
7. The method of claim 7, wherein said acute ischemic reperfusion injury results from a myocardial infarct.
8. The method of claim 4 or 5, wherein said ischemic reperfusion injury is iatrogenically-induced.

9. The method of claim 8, wherein said iatrogenically-induced ischemic reperfusion injury results from cardiac surgery.

10. The method of claim 9, wherein said cardiac surgery is coronary artery bypass surgery or valve replacement surgery.

11. The method of claim 8, wherein said iatrogenically-induced ischemic reperfusion injury results from a percutaneous transluminal coronary intervention.

12. The method of claim 11, wherein said percutaneous transluminal coronary intervention is angioplasty or stenting.

13. The method of claim 8, wherein said iatrogenically-induced ischemic reperfusion injury results from a heart transplant.

14. A method for treating, reducing, or preventing a cardiac disorder in a mammal, said method comprising administering to said mammal an effective amount of an anti-apoptotic FADD inhibitor.

15. A method for treating, reducing, or preventing a cardiac disorder in a mammal, said method comprising administering to said mammal an effective amount of FADD or an anti-inflammatory FADD inhibitor.

16. The method of claim 14 or 15, wherein said cardiac disorder is a result of a chronic ischemia injury, an acute ischemia injury, an ischemia-reperfusion injury, a myocardial infarction, myocarditis, heart failure, cardiac transplantation, or an autoimmune disorder.

17. A method for treating, reducing, or preventing heart failure in a mammal, said method comprising administering to said mammal an effective amount of an anti-apoptotic FADD inhibitor.

18. A method for treating, reducing, or preventing heart failure in a mammal, said method comprising administering to said mammal an effective amount of FADD or an anti-inflammatory FADD inhibitor.

19. The method of any one of claims 1, 4, 14, or 17, wherein said anti-apoptotic FADD inhibitor is a nucleic acid encoding a dominant negative FADD protein.

20. The method of any one of claims 3, 5, 15, or 18, wherein said anti-inflammatory FADD inhibitor is a nucleic acid encoding a dominant negative FADD protein.

21. The method of any one of claims 3-5, 14, 15, 17, or 18, wherein said mammal is a human.

22. A method for preparing a donor cardiomyocyte for transplantation into a recipient, said method comprising contacting said cardiomyocyte with an anti-apoptotic FADD inhibitor.

23. A method for preparing a donor cardiomyocyte for transplantation into a recipient, said method comprising contacting said cardiomyocyte with FADD or an anti-inflammatory FADD inhibitor.

24. The method of claim 22 or 23, wherein said FADD inhibitor is a nucleic acid encoding a dominant negative FADD protein.

25. The method of claim 22 or 23, wherein said donor cardiomyocyte is in a cardiac tissue to be transplanted into said recipient.

26. The method of claim 22 or 23, wherein said donor cardiomyocyte is in a heart to be transplanted into said recipient.

27. A human cardiomyocyte expressing an anti-apoptotic FADD inhibitor.

28. A human cardiomyocyte expressing an anti-inflammatory FADD inhibitor.

29. A human cardiomyocyte expressing a dominant negative FADD protein.

30. A human cardiomyocyte expressing a recombinant FADD protein.

31. A cardiac tissue expressing an anti-apoptotic FADD inhibitor.

32. A cardiac tissue expressing an anti-inflammatory FADD inhibitor.

33. A cardiac tissue expressing a dominant negative FADD protein.

34. A cardiac tissue expressing a recombinant FADD protein.

35. The cardiac tissue of claim 31-34, wherein said tissue is from a human or a pig.

36. A heart expressing an anti-apoptotic FADD inhibitor.

37. A heart expressing an anti-inflammatory FADD inhibitor.

38. A heart expressing a dominant negative FADD protein.

39. A heart expressing a recombinant FADD protein.

40. The heart of claim 36-39, wherein said tissue is from a human or a pig.

41. A method for identifying a candidate compound for reducing or preventing apoptosis of cardiomyocytes, said method comprising:

(a) contacting a cardiomyocyte expressing a FADD gene with a candidate compound; and

(b) measuring FADD gene expression or FADD protein activity in said a cardiomyocyte, a candidate compound that reduces said expression or said activity, relative to FADD expression or activity in a cardiomyocyte not contacted with said candidate compound, identifying said candidate compound as a candidate compound useful for reducing or preventing apoptosis of cardiomyocytes.

42. A method for identifying a candidate compound for treating, reducing, or preventing cardiac inflammation in a mammal, said method comprising:

(a) contacting a cardiomyocyte expressing a FADD gene with a candidate compound; and

(b) measuring FADD gene expression or FADD protein activity in said a cardiomyocyte, a candidate compound that reduces said expression or said activity, relative to FADD expression or activity in a cardiomyocyte not contacted with said candidate compound, identifying said candidate compound as a candidate compound useful for treating, reducing, or preventing cardiac

inflammation.

43. A method for identifying a candidate compound for treating, reducing, or preventing ischemic reperfusion injury, said method comprising:

(a) contacting a cardiomyocyte expressing a FADD gene with a candidate compound; and

(b) measuring FADD gene expression or FADD protein activity in said a cardiomyocyte, a candidate compound that reduces said expression or said activity, relative to FADD expression or activity in a cardiomyocyte not contacted with said candidate compound, identifying said candidate compound as a candidate compound useful for treating, reducing, or preventing ischemic reperfusion injury.

44. A method for identifying a candidate compound for treating, reducing, or preventing heart failure, said method comprising:

(a) contacting a cardiomyocyte expressing a FADD gene with a candidate compound; and

(b) measuring FADD gene expression or FADD protein activity in said a cardiomyocyte, a candidate compound that reduces said expression or said activity, relative to FADD expression or activity in a cardiomyocyte not contacted with said candidate compound, identifying said candidate compound as a candidate compound useful for treating, reducing, or preventing heart failure.

45. A method for identifying a candidate compound for treating, reducing, or preventing a cardiac disorder, said method comprising:

(a) contacting a cardiomyocyte expressing a FADD gene with a candidate compound; and

(b) measuring FADD gene expression or FADD protein activity in said a cardiomyocyte, a candidate compound that reduces said expression or said

activity, relative to FADD expression or activity in a cardiomyocyte not contacted with said candidate compound, identifying said candidate compound as a candidate compound useful for treating, reducing, or preventing said cardiac disorder.

46. The method of any one of claims 41-45, wherein said FADD gene is a FADD fusion gene.

47. The method of any one of claims 41-45, wherein step (b) comprises measuring expression of FADD mRNA or protein.

48. The method of any one of claims 41-45, wherein said cardiomyocyte is a mammalian cell.

49. The method of claim 48, wherein said mammalian cell is a rodent cell.

50. A method for identifying a candidate compound for reducing or preventing apoptosis of cardiomyocytes said method comprising:

- (a) contacting FADD protein with a candidate compound; and
- (b) determining whether said candidate compound binds said FADD protein, a candidate compound that binds said FADD protein being a candidate compound useful for reducing or preventing apoptosis of cardiomyocytes.

51. A method for identifying a candidate compound for treating, reducing, or preventing cardiac inflammation, said method comprising:

- (a) contacting FADD protein with a candidate compound; and
- (b) determining whether said candidate compound binds said FADD protein, a candidate compound that binds said FADD protein being a candidate compound useful for treating, reducing, or preventing cardiac inflammation.

52. A method for identifying a candidate compound for treating, reducing, or preventing ischemic-reperfusion injury, said method comprising:

- (a) contacting FADD protein with a candidate compound; and
- (b) determining whether said candidate compound binds said FADD protein, a candidate compound that binds said FADD protein being a candidate compound useful for treating, reducing, or preventing ischemic reperfusion injury.

53. A method for identifying a candidate compound for treating, reducing, or preventing heart failure, said method comprising:

- (a) contacting FADD protein with a candidate compound; and
- (b) determining whether said candidate compound binds said FADD protein, a candidate compound that binds said FADD protein being a candidate compound useful for treating, reducing, or preventing ischemic reperfusion injury.

54. A method for identifying a candidate compound for treating, reducing, or preventing cardiac disorder, said method comprising:

- (a) contacting FADD protein with a candidate compound; and
- (b) determining whether said candidate compound binds said FADD protein, a candidate compound that binds said FADD protein being a candidate compound useful for treating, reducing, or preventing said cardiac disorder.

55. The method of claim 41, 42, 43, 44, 45, 50, 51, 52, 53, or 54, wherein said FADD is human FADD.

56. A kit comprising:

- (a) a vector expressing a nucleic acid encoding an anti-apoptotic FADD inhibitor; and
- (b) instructions for delivery of said vector to a cardiomyocyte, cardiac

tissue, or a heart of a mammal for reducing or preventing apoptosis of cardiomyocytes.

57. A kit comprising:

- (a) a vector expressing a nucleic acid encoding FADD or an anti-inflammatory FADD inhibitor; and
- (b) instructions for delivery of said vector to a cardiomyocyte, cardiac tissue, or a heart of a mammal for treating, reducing, or preventing cardiac inflammation.

58. A kit comprising:

- (a) a vector expressing a nucleic acid encoding FADD, an anti-inflammatory FADD inhibitor, or an anti-apoptotic FADD inhibitor; and
- (b) instructions for delivery of said vector to a cardiomyocyte, cardiac tissue, or a heart of a mammal for reducing or preventing ischemic reperfusion injury.

59. A kit comprising:

- (a) a vector expressing a nucleic acid encoding FADD, an anti-inflammatory FADD inhibitor, or an anti-apoptotic FADD inhibitor; and
- (b) instructions for delivery of said vector to a cardiomyocyte, cardiac tissue, or a heart of a mammal for reducing or preventing heart failure.

60. A kit comprising:

- (a) a vector expressing a nucleic acid encoding FADD, an anti-inflammatory FADD inhibitor, or an anti-apoptotic FADD inhibitor; and
- (b) instructions for delivery of said vector to a cardiomyocyte, cardiac tissue, or a heart of a mammal for reducing or preventing a cardiac disorder.

61. The kit of any one of claims 56-60, wherein said cardiomyocyte, said cardiac tissue, or said heart is donor material to be transplanted into a recipient.

62. The kit of any one of claims 56-60, wherein said cardiomyocyte, said cardiac tissue, and said heart are *in vitro*.

63. The kit of any one of claims 56-60, wherein said cardiomyocyte, said cardiac tissue, and said heart are in a patient having a cardiac disorder.

64. The kit of any one of claims 56-60, wherein said mammal is a human.